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A Tour of Business Intelligence Technologies

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ABSTRACT (REQUIRED)

The Business Intelligence (BI) landscape has weathered significant change and consolidation in the late 2000's[1-3]. This has left fewer stand alone offerings, and greater integration into "stack" technologies led by significant purchases and integrations by IBM, Oracle and SAP[4-6]. While these acquisitions have led to stronger emerging BI and Corporate Performance Management (CPM) power houses it has subjected researchers and businesses to a daunting sales force, with limited ability to derive side by side performance comparisons. Start up costs and the differentiation in underlying hardware requirements make the purchase of two or more technologies cost prohibitive, encouraging Universities, medium and small businesses to move away from the research and investment that served as the foundation for many of the original BI vendors. In recognizing this gap and the need for additional research to continue to drive BI adoption and integration, the purpose of this tutorial is to provide a guided hands-on tour of five BI tools with significant market share. This tour will focus on enabling attendees to gain exposure to and a better understanding of the features, benefits and opportunities of best in breed BI tools.

Keywords (Required)

Business Intelligence, Decision Support Systems, User Interface, User Adoption

INTRODUCTION

Business Intelligence (BI) platforms have demonstrated their value in the business landscape have resultantly become more attractive to acquisition by larger integrated platforms [1-3]. The consolidation in the marketplace has left fewer stand alone offerings, and greater integration into "stack" technologies led by significant purchases and integrations by IBM, Oracle and SAP[4-6]. The setting has shifted so dramatically that it has become difficult to effectively evaluate and select a best in breed vendor. A daunting sales force, an increased cost of entry and a limited ability to derive side by side performance comparisons has illustrated the need for additional independent research. Unfortunately, start up costs and significant proprietary differentiation has made the purchase of two or more technologies cost prohibitive for most Universities and independent consulting firms.

TOOL OVERVIEW

This tutorial will focus on addressing the exposure gap required to enable the research community to formulate frameworks and hypothesis to advance BI. The tour will center on reviewing the newest trend in BI, Microsoft Office interface integrations, including evaluation of the interface, performance, capabilities and issues. Attendees will gain exposure to and a better understanding of the features, benefits and opportunities of best in breed BI tools. In order to reflect the current BI landscape five tools have been selected that are representative of market share and are currently strategically used at a Fortune 500 company based in the Midwest. These tools include:

- SAS Enterprise Guide a SAS product [7]
- MicroStrategy a MicroStrategy product [8]
- Essbase an Oracle product [5]
- SAP Planning & Consolidation an SAP product [4]
- Business Explorer an SAP product [4]

The tool demonstration will be based on their current configuration at the Fortune 500 Company. A standard Enterprise Data Warehouse will be leveraged in order to ensure consistency in data size to allow for full performance considerations to be demonstrated.

RESEARCH LANDSCAPE

This presentation will build upon the extensive research has been published in the arenas of Decision Support Systems (DSS) and the more problem solution focused field of Business Intelligence (BI). Existing research has been primarily focused on the aspects of problem solving and decision making [9-12]. While researchers have shed light on this singular focus through comprehensive literature reviews [13-15] there has not yet been a shift in the published research relating to this field. Therefore this tutorial will focus on the practical aspects of tool exposure required to continue to expand the research horizons relating to BI. In so doing, it is anticipated that the audience will see opportunity beyond understanding executive commitment to BI [12, 16] and the perceived benefits [16-18]. By highlighting areas where additional research would be beneficial, including usability [19] and technology comparisons [19-23], the audience will gain the problem context surrounding BI research opportunities.

TOOL EVALUATION

This tutorial will also focus on presenting a review of Figure 1 the Gartner Magic Quadrant for BI, 2009 [24] in respect to the five technologies. This research, prepared by Gartner and released each January, is widely consumed by business audiences, and leveraged in vendor marketing. The Magic Quadrant focuses on the strategic positioning of BI vendors, and as such is influential and important for researchers to consider and either expand upon or refute. All five of the technologies that will be covered in the tutorial are positioned in the "leaders" quadrant indicating their market positioning is strong and they have products that have a broad appeal in the BI marketplace.

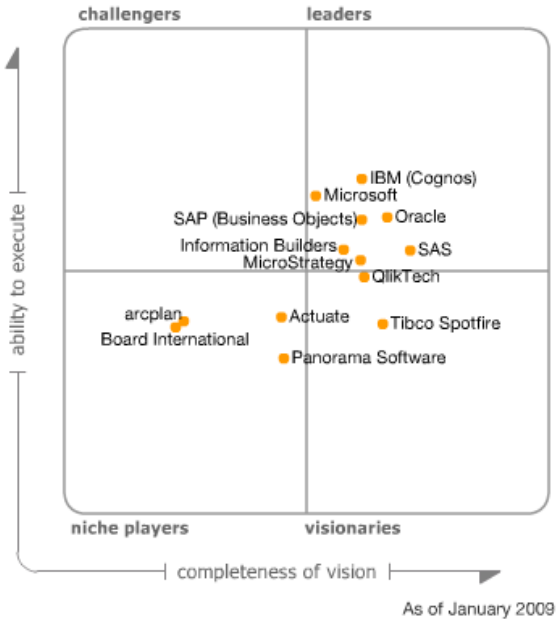

FIGURE 1. GARTNER MAGIC QUADRANT FOR BI, 2009[24]

However, as the Gartner research goes on to say, while all of these products are leaders, they have very dissimilar strengths and cautions. Discussion will focus on the strengths and cautions of each tool as outlined by Gartner and highlighted in the demonstrations as summarized in Figure 2.

Vendor	Strengths	Cautions
SAS	-Predictive Modelling -Applications for Business Specific Problems (Risk, Anti-Money Laundering) -Brand awareness	- Reputation of highly skilled user base - Web interface - Subscription based pricing
MicroStrategy	- Large data volumes -Parameterized reporting -Metadata management	- Steep learning curve - Suited for data warehouses but not transactional sources - BI Vendor of "last resort" reputation
Oracle (Essbase)	- Completeness of vision - Large sales force - Significant momentum in market share	- Constant innovation - Low customer satisfaction - Report interface weak
SAP (Business Explorer & Planning and Consolidation)	- Large data volumes -ERP Integration - BI Accelerator for improved performance	-Low customer satisfaction - Netweaver and Business Objects Integration - OLAP

FIGURE 2. SUMMARY OF GARTNER STRENGTHS AND CAUTIONS [24]

TOOL USAGE PATTERNS

In building upon the recommendations of Gartner, the Fortune 500 Company has focused on tool selection from an end user decision matrix perspective. This has involved the identification of three decision components associated with tool selection those being data source(s), interface preference, and type of reporting or analytics task to be performed. These three components form a matrix that is meant to empower an end user to select a tool that best meets their needs criteria. While this decision matrix is complex, it serves as an excellent grounding into the organizational components of adoption and end user impact of tool selection. The example outlined in Figure 3 provides an excellent reference for creating a framework for researchers to evaluate tools, as well as an excellent reference point when beginning a BI tool evaluation.

Data Source	Information Access Method	Static Reporting	Dashboard & Scorecard	Parameterized Reporting	Ad-Hoc Analysis
Enterprise Data Warehouse - Data Mart					
	Stand-alone reporting	Microstrategy	Microstrategy	Microstrategy	Microstrategy
	Microsoft Interface	Microsoft Tools	Microsoft Tools	X	X
	Power User / Report Builder	X	Microstrategy	Microstrategy	Microstrategy
	Access as part of a core app	X	X	X	X
Departmental Data Mart					
	Stand-alone reporting	Microstrategy/WebFocus	Microstrategy/WebFocus	Microstrategy/WebFocus	Microstrategy
	Microsoft Interface	Microsoft Tools	Microsoft Tools	X	X
	Power User / Report Builder	X	Microstrategy	Microstrategy	Microstrategy
	Access as part of a core app	X	X	X	X
Operational Data Store (ODS)					
	Stand-alone reporting	Microstrategy/WebFocus	Microstrategy/WebFocus	Microstrategy/WebFocus	Microstrategy
	Microsoft Interface	Microsoft Tools	Microsoft Tools	X	X
	Power User / Report Builder	X	Microstrategy	Microstrategy	Microstrategy
	Access as part of a core app	Jreport/Visual Studio 2005 Report Viewer Controls	Jreport/Visual Studio 2005 Report Viewer Controls	Jreport/Visual Studio 2005 Report Viewer Controls	Jreport/Visual Studio 2005 Report Viewer Controls
Multi-Platform/multi-Database					
	Stand-alone reporting	WebFocus (Enterprise) / QlickView (Pilot - Dept)	WebFocus (Enterprise) / QlickView (Pilot - Dept)	WebFocus (Enterprise) / QlickView (Pilot - Dept)	WebFocus
	Microsoft Interface	Microsoft Tools	Microsoft Tools	X	X
	Power User / Report Builder	X	WebFocus (Enterprise) / QlickView (Pilot - Dept)	WebFocus (Enterprise) / QlickView (Pilot - Dept)	WebFocus
	Access as part of a core app	Jreport/Visual Studio 2005 Report Viewer Controls	Jreport/Visual Studio 2005 Report Viewer Controls	Jreport/Visual Studio 2005 Report Viewer Controls	Jreport/Visual Studio 2005 Report Viewer Controls
Transactional (OLTP) System Access					
	Stand-alone reporting	WebFocus	WebFocus	WebFocus	WebFocus
	Microsoft Interface	Microsoft Tools	Microsoft Tools	X	X
	Power User / Report Builder	X	X	X	X
	Access as part of a core app	Jreport/Visual Studio 2005 Report Viewer Controls	Jreport/Visual Studio 2005 Report Viewer Controls	Jreport/Visual Studio 2005 Report Viewer Controls	Jreport/Visual Studio 2005 Report Viewer Controls

Note : X Represents a solution is invalid, either it should not be implemented from a best practice stand point or is technically not possible.

FIGURE 3. BI TOOL SELECTION MATRIX

CONCLUSION

The intent of this tutorial is to enable the research community to understand research opportunities that exist in BI through the exposure to five best in breed BI tools. Focus will be placed on the research frameworks that may be beneficial as BI continues to mature and develop, while maintaining the business context necessary to understand the problem and solution space. The spotlight will be on informing a research and business focused audience by discussing both the technological and business perspectives of BI with the purpose of expanding exposure to alternative tool offerings in a way which spurs further understanding and potential research.

References:

1. Bartz, D. IBM purchase of Cognos gets U.S. antitrust approval | Reuters. Reuters, 2007.

2. Prodhan, G. Gartner sees business intelligence spending rising. Reuters, 2008.

3. Franklin, P., and Ritsuko, A. UPDATE 5-IBM to buy analytics company SPSS for $1.2 bln. Reuters, 2009.

4. SAP. SAP United States - Business Management Software Solutions Applications and Services. 2010.

5. Corporation, O. Oracle 11g, Siebel, PeopleSoft. 2010.

6. Corporation, I. IBM - Business Intelligence. 2010.

7. SAS | Business Analytics and Business Intelligence Software. 2010.

8. MicroStrategy | Business Intelligence Software Solutions. 2010.

9. Alavi, M., and Leidner, D.E. Review: Knowledge Management and Knowledge Management Systems: Conceptual foundations and research issues. *MIS Quarterly*, 25, 1 (2001), 107-136.

10. Rouibah, K., and Ould-Ali, S. Dynamic data sharing and security in a collaborative product definition management system. *Robotics & Computer-Integrated Manufacturing*, 23, 2 (2007), 217-233.

11. Schultze, U., and Leidner, D.E. STUDYING KNOWLEDGE MANAGEMENT IN INFORMATION SYSTEMS RESEARCH: DISCOURSES AND THEORETICAL ASSUMPTIONS. *MIS Quarterly*, 26, 3 (2002), 213-242.

12. Cooper, B.L., Watson, H.J., Wixom, B.H., and Goodhue, D.L. Data Warehousing supports corporate strategy at First American Corporation. *MIS Quarterly*, 24, 4 (2000), 547-567.

13. Clark, J.T.D., Jones, M.C., and Armstrong, C.P. The Dyanmic Structure of Management Support Systems: Theory Development, Research Focus and Direction. *MIS Quarterly*, 31, 3 (2007), 579-615.

14. Arnott, D., and Pervan, G. A critical analysis of decision support systems research. *Journal of Information Technology (Palgrave Macmillan)*, 20, 2 (2005), 67-87.

15. Arnott, D., and Pervan, G. Eight key issues for the decision support systems discipline. *Decision Support Systems*, 44, 3 (2008), 657-672.

16. Wixom, B.H., and Watson, H.J. An empirical investigation of the factors affecting Data Warehousing success. *MIS Quarterly*, 25, 1 (2001), 17-41.

17. Gessner, G.H., and Volonino, L. Quick response improves returns on Business Intelligence investments. *Information Systems Management*, 22, 3 (2005), 66-74.

18. Watson, H.J., Rainer Jr, R.K., and Koh, C.E. Executive Information Systems: A Framework for Development and a Survey of Current Practices. *MIS Quarterly*, 15, 1 (1991), 13-30.

19. Wingyan, C., Hsinchun, C., and Nunamaker Jr, J.F. A Visual Framework for Knowledge Discovery on the Web: An Empirical Study of Business Intelligence Exploration. *Journal of Management Information Systems*, 21, 4 (2005), 57-84.

20. Dolk, D.R. Integrated model management in the data warehouse era. *European Journal of Operational Research*, 122, 2 (2000), 199-218.

21. Negash, S. Business Intelligence. *Communications of AIS*, 2004, 13 (2004), 177-195.

22. Sen, A., and Sinha, A.P. A comparison of Data Warehousing methodologies. *Communications of the ACM*, 48, 3 (2005), 79-84.

23. Tseng, F.S.C., and Chou, A.Y.H. The concept of document warehousing for multi-dimensional modeling of textual-based business intelligence. *Decision Support Systems*, 42, 2 (2006), 727-744.

24. Richardson, J., Schlegel, K., Sallam, R.L., and Hostmann, B. Magic Quadrant for Business Intelligence Platforms. 2009.